

## **DETAILED ACTION**

### ***Response to Amendment***

1. Claims 1-4, 12, 19, 22-29, 35-37, 41, 42, 44, 49, 55, and 57-83, are now pending.

### ***Election/Restrictions***

2. Claims 22-24, 35-37, 41, 42, 44, 49, and 63-67, remain withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention/species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on December 19, 2007.

### ***Response to Arguments***

3. The rejections of claims 1-4, 12, 19, 25-29, 55, and 57-62, are withdrawn in view of the amendment.

### ***Claim Rejections - 35 USC § 102***

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 68, 69, 72-76, and 82, are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 2001/0019773 A1.

A. This reference teaches a process for the formation of an organic film on a substrate comprising bringing the substrate into contact with a solution [0010, for example]. The solution includes a metal (Si) based water-repellent (surfactant) having a hydrolysable group [0025-0036], an inorganic/organic acid catalyst [0028, 0032]. The water content is disclosed as less than 4000 ppm [0041].

B. The organic film is not expressly taught as a "thin film" but, since Applicant does not expressly define the term "thin film" and this reference anticipates Applicant's claimed deposition compounds and process steps, resulting in a film having a surface roughness on the order of nanometers [0182], it is the Examiner's position that the film deposited may be considered a "thin film," within the context of the invention. In the alternative, it is the Examiner's position that the thickness of the film is a result-effective variable: the film must be thick

enough to achieve the desired coverage and exhibit the desired water repellency, but not so thick as to be unduly wasteful of materials or, as in the case of a glass substrate, to adversely affect the transparency of the substrate. As such, it would have been obvious to one skilled in the art to optimize the thickness of the film by routine experimentation, absent evidence of unexpected results demonstrating the criticality of the thickness of the film.

C. The ratios in this claim may be translated into 0.1%-100%, of which the ratio of 1:1 wt.-% taught in [0029] is inclusive.

D. This reference teaches the following compounds that meet the limitations of this claim:

[0026] As the water-repellent main material, fluoroalkylalkoxysilane-system compounds or fluoroalkylhalidesilane-system compounds are usable, which are, for example,  $\text{CF}_3\text{CH}_2\text{CH}_2\text{Si(OR)}_3$ ,  $\text{CF}_3(\text{CF}_2)_5\text{CH}_2\text{CH}_2\text{Si(OR)}_3$ ,  $\text{CF}_3(\text{CF}_2)_3\text{CH}_2\text{CH}_2\text{SiR(OR)}_2$ ,  $\text{CF}_3(\text{CF}_2)_7\text{CH}_2\text{CH}_2\text{Si(OR)}_3$ ,  $\text{CF}_3(\text{CF}_2)_7\text{CH}_2\text{CH}_2\text{SiR(OR)}_2$ ,  $\text{CF}_3\text{CH}_2\text{CH}_2\text{SiCl}_3$ ,  $\text{CF}_3(\text{CF}_2)_5\text{CH}_2\text{CH}_2\text{SiCl}_3$ ,  $\text{CF}_3(\text{CF}_2)_5\text{CH}_2\text{CH}_2\text{SiRCl}_2$ ,  $\text{CF}_3(\text{CF}_2)_7\text{CH}_2\text{CH}_2\text{SiCl}_3$ ,  $\text{CF}_3(\text{CF}_2)_7\text{CH}_2\text{CH}_2\text{SiRCl}_2$ ,  $\text{CF}_3(\text{CF}_2)_9\text{CH}_2\text{CH}_2\text{Si(OR)}_3$ ,  $\text{CF}_3(\text{CF}_2)_9\text{CH}_2\text{CH}_2\text{RSi(OR)}_2$ ,  $\text{CF}_3(\text{CF}_2)_9\text{CH}_2\text{CH}_2\text{SiCl}_3$  and  $\text{CF}_3(\text{CF}_2)_9\text{CH}_2\text{CH}_2\text{RSiCl}_2$ . It is to be noted that "R" represents  $\text{CH}_3$ ,  $\text{C}_2\text{H}_5$  or  $\text{C}_3\text{H}_7$ .

E. This reference teaches between 15% and 75% RH [0045].

F. This reference teaches hydrocarbon-based solvents [0027].

G. While this reference does not expressly state that the films are crystalline or monomolecular, it is the Examiner's position that this is a physical property of the deposited film. Since this reference anticipates Applicant's claimed deposition compounds and process steps, it is the Examiner's position that the film

deposited may be considered as possessing these properties within the context of the invention.

8. Claims 70, 71, 77-81, and 83, are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 2001/0019773 A1.

A. As noted above, this reference teaches that the water content is less than 4000 ppm [0041]. While this reference does not specify whether the contacting step is repeated, it is well known to repeat application of a coating material in order to build up a film of a desired thickness. Further, it would have been obvious to contact two or more substrates with the same solution in order to improve the efficiency of the process by processing multiple substrates in the same bath.

B. This reference teaches the following compounds that meet the limitations of this claim:

[0026] As the water-repellent main material, fluoroalkylalkoxysilane-system compounds or fluoroalkylhalidesilane-system compounds are usable, which are, for example,  $\text{CF}_3\text{CH}_2\text{CH}_2\text{Si}(\text{OR})_3$ ,  $\text{CF}_3(\text{CF}_2)_5\text{CH}_2\text{CH}_2\text{Si}(\text{OR})_3$ ,  $\text{CF}_3(\text{CF}_2)_5\text{CH}_2\text{CH}_2\text{SiR}(\text{OR})_2$ ,  $\text{CF}_3(\text{CF}_2)_7\text{CH}_2\text{CH}_2\text{Si}(\text{OR})_3$ ,  $\text{CF}_3(\text{CF}_2)_7\text{CH}_2\text{CH}_2\text{SiR}(\text{OR})_2$ ,  $\text{CF}_3\text{CH}_2\text{CH}_2\text{SiCl}_3$ ,  $\text{CF}_3(\text{CF}_2)_5\text{CH}_2\text{CH}_2\text{SiCl}_3$ ,  $\text{CF}_3(\text{CF}_2)_5\text{CH}_2\text{CH}_2\text{SiRCl}_2$ ,  $\text{CF}_3(\text{CF}_2)_7\text{CH}_2\text{CH}_2\text{SiCl}_3$ ,  $\text{CF}_3(\text{CF}_2)_7\text{CH}_2\text{CH}_2\text{SiRCl}_2$ ,  $\text{CF}_3(\text{CF}_2)_5\text{CH}_2\text{CH}_2\text{Si}(\text{OR})_3$ ,  $\text{CF}_3(\text{CF}_2)_6\text{CH}_2\text{CH}_2\text{RSi}(\text{OR})_2$ ,  $\text{CF}_3(\text{CF}_2)_5\text{CH}_2\text{CH}_2\text{SiCl}_3$  and  $\text{CF}_3(\text{CF}_2)_5\text{CH}_2\text{CH}_2\text{RSiCl}_2$ . It is to be noted that "R" represents  $\text{CH}_3$ ,  $\text{C}_2\text{H}_5$  or  $\text{C}_3\text{H}_7$ .

C. This reference teaches between 15% and 75% RH [0045].

D. This reference teaches hydrocarbon-based solvents [0027].

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E. While this reference does not expressly state that the films are crystalline or monomolecular, it is the Examiner's position that this is a physical property of the deposited film. Since this reference anticipates Applicant's claimed deposition compounds and process steps, it is the Examiner's position that the film deposited may be considered as possessing these properties within the context of the invention.

***Allowable Subject Matter***

9. Claims 1-4, 12, 19, 25-29, 55, and 57-62, are allowed.

10. The following is an examiner's statement of reasons for allowance: The prior art neither teaches nor suggests the claimed process utilizing the claimed catalysts or fluorinated hydrocarbon solvent.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William P. Fletcher III whose telephone number is (571) 272-1419. The examiner can normally be reached on Sunday, 5:00 AM - 12:00 PM and Monday through Friday, 5:00 AM - 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William Phillip Fletcher III/  
Primary Examiner, Art Unit 1715